


August 12, 1996

MEMORANDUM

TO: Orville D. Green, Assistant Administrator
Permits and Enforcement

FROM: Brian R. Monson, Chief 
Operating Permits Bureau

SUBJECT: Issuance of Tier II Operating Permit #045-00003 to
Unimin Corporation, Emmett, Idaho

PURPOSE

The purpose of this memorandum is to satisfy the requirements of IDAPA 16.01.01 Sections 400 through 406 (Rules for the Control of Air Pollution in Idaho) for issuing Operating Permits.

PROJECT DESCRIPTION

This project is for the issuance of a Tier II Operating Permit (OP) for Unimin Corporation facility located at Emmett, Idaho, in order to establish the facility as a synthetic minor source. The emissions sources of the facility are: raw sand unloading and feeding, hoppers, conveyor and screw belts, bucket elevators, fluidized bed dryer, natural gas burner, vibrating screens, bagging stations, and bulk loading stations. Fugitive emissions are produced from sand stockpiles and from haul roads (paved and unpaved).

SUMMARY OF EVENTS

On July 13, 1995, DEQ received a Tier II OP application for Unimin Corporation - Emmett Plant, Idaho. Additional information was received on October 2, 1995. The application was declared complete on November 1, 1995. On December 20, 1995, DEQ asked Unimin Corporation to voluntarily grant DEQ a sixty (60) day extension to the mandated timeline for proposed final action, in order to resolve a problem associated with the emissions factors and the emissions calculations. A letter explaining the problems with the emissions factors was sent to Unimin Corporation on December 22, 1995. On January 9, 1996, DEQ staff met with Unimin representatives and discussed the problems associated with emissions calculations. On January 12, 1996, DEQ sent a letter to Unimin Corporation pointing out which emissions factors are acceptable for estimating the emissions from the Emmett facility. More information about the facility's operations was received on February 12, 1996, March 11, 1996, and March 12, 1996.

On March 22, 1996, a proposed Tier II OP was issued for public comment. A public comment period was held from March 27, 1996, until April 26, 1996, on the air quality aspects of the proposed permit. No comments were received.

RECOMMENDATIONS

Based on the review of the operating permit application, and on applicable state and federal regulations concerning the permitting of air pollution sources, the Bureau staff recommends that Unimin Corporation, Emmett, Idaho, be issued a Tier II Operating Permit. Staff also recommends that the facility be notified in writing of the obligation to pay permit application fees for the Tier II permit.

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cc: J. Palmer, SWIRO
OP File Manual
Source File
COF

August 12, 1996

MEMORANDUM

TO: Brian R. Monson, Chief
Operating Permits Bureau
Permits and Enforcement

FROM: Camille D. Ajaka, Air Quality Engineer
Operating Permits Bureau
Almer B. Casile, Air Quality Engineer *ABC #18*
Operating Permits Bureau

THROUGH: Susan J. Richards, Air Quality Permits Manager *ABC for SJR*
Operating Permits Bureau

SUBJECT: Technical Analysis for Tier II Operating Permit #045-00003,
Unimin Corporation, Emmett, Idaho

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 16.01.01 Sections 400 through 406 (Rules for the Control of Air Pollution in Idaho) for issuing Operating Permits.

FACILITY DESCRIPTION

Unimin Corporation, Emmett, is an industrial sand processing plant. Unimin mines a feldspathic sand from the Zierold pit which is about seven (7) miles away from the processing plant. Raw sand is stockpiled and then processed (wet screening and milling) into the Wet Plant. Damp processed sand is stockpiled and then dried using a natural gas fired fluidized bed dryer. Dry sand is screened and bagged or bulk loaded into trucks or railcars.

Facility processes include, but are not limited to, the following:

Wet Plant Feeding and Processing

A front-end loader shall transfer wet raw sand from stockpiles to a hopper, HO-01. Hopper HO-01 shall transfer the material to feeder, FE-01, which shall then transfer the material to belt conveyor BC-01. After that, water shall be added to the process where sand is wet screened by two vibrating screens, VS-12 and VS-13. Wet milling shall occur in rod mill RD-01.

Dryer Feeding Operation

A front-end loader shall transfer wet sand from stockpiles to a hopper, HO-02. Hopper HO-02 shall transfer the material to screw conveyor, SC-01, which shall then transfer the material to a belt conveyor BC-02. After that, sand shall be transferred to bucket elevator BE-01, which shall be controlled by DC-01, and then to the dryer DR-01, which shall be controlled by DC-03.

Loadout Operations

A front-end loader shall transfer damp sand from stockpiles to hopper, HO-03, which shall transfer the material to a belt conveyor BC-12. All loadout operations shall be controlled by either DC-02 or DC-04, except for loadout operation (which includes conveying to hopper HO-04, Bulk loading 11C, and belt conveying BC-11).

PROJECT DESCRIPTION

This project is for an Operating Permit (OP) for the following existing point and fugitive emission sources.

Point Sources:

- (1) Dust Collector DC-01 Stack: Emissions from this stack are controlled by a wet scrubber DC-01.

The stack data are the following:

UTM-X Coordinate (KM)	536.741
UTM-Y Coordinate (KM)	4857.149
Stack Exit Height (ft)	38.0
Stack Exit Diameter (ft)	1.13
Stack Exit Flow Rate (ACFM)	12,000
Stack Exit Temperature (°F)	Ambient

- (2) Dust Collector DC-02 Stack: Emissions from this stack are controlled by a wet scrubber DC-02.

The stack data are the following:

UTM-X Coordinate (KM)	536.763
UTM-Y Coordinate (KM)	4857.163
Stack Exit Height (ft)	25.0
Stack Exit Diameter (ft)	1.13
Stack Exit Flow Rate (ACFM)	14,000
Stack Exit Temperature (°F)	Ambient

- (3) Dust Collector DC-03 Stack: Emissions from this stack are controlled by a wet scrubber DC-03.

The stack data are the following:

UTM-X Coordinate (KM)	536.760
UTM-Y Coordinate (KM)	4857.164
Stack Exit Height (ft)	37.0
Stack Exit Diameter (ft)	1.41
Stack Exit Flow Rate (ACFM)	21,000
Stack Exit Temperature (°F)	Ambient

- (4) Dust Collector DC-04 Stack: Emissions from this stack are controlled by a wet scrubber DC-04.

The stack data are the following:

UTM-X Coordinate (KM)	536.780
UTM-Y Coordinate (KM)	4857.176
Stack Exit Height (ft)	20.0
Stack Exit Diameter (ft)	0.85
Stack Exit Flow Rate (ACFM)	6,000
Stack Exit Temperature (°F)	Ambient

- (5) Wet Plant feeding operation
(6) Dryer feeding operation
(7) Product loading operation

Fugitive Sources:

- (1) Haul roads
(2) Stockpiles

A more detailed process description can be found in the Tier II OP application materials and in the facility's source file.

SUMMARY OF EVENTS

On July 13, 1995, DEQ received a Tier II OP application for Unimin Corporation - Emmett Plant, Idaho. Additional information was received on October 2, 1995. The application has been declared complete on November 1, 1995. On December 20, 1995, DEQ asked Unimin Corporation to voluntarily grant DEQ a sixty (60) day extension to the mandated timeline for proposed final action, in order to resolve a problem associated with the emissions factors and the emissions calculations. A letter explaining the problems with the emissions factors was sent to Unimin Corporation on December 22, 1995. On January 9, 1996, DEQ staff met with Unimin representatives and discussed the problems associated with emissions calculations. On January 12, 1996, DEQ sent a letter to Unimin Corporation pointing out which emissions factors are acceptable for estimating the emissions from the Emmett facility. More information about the facility's operations was received on February 12, 1996, March 11, 1996, and March 12, 1996.

DISCUSSION

1. Emission Estimates

Emission estimates were provided by Unimin Corporation. The calculations were resubmitted by the applicant according to DEQ's request. DEQ also estimated the emissions from all the sources of the facility (attached spreadsheet). The hourly emissions calculations were based on the maximum production rate of each equipment/process, and not the maximum rated capacity of that equipment/process. The maximum production rate of any equipment/process is limited to the production rates of the preceding and/or the following equipment/process. The annual emissions calculations were based on 8760 hours per year operation.

All emissions from equipment/processes were estimated using emissions factors furnished by AP-42, 5th edition. Emissions factors from AP-42, 4th edition were used when such emissions factors are not available in AP-42, 5th edition. Emissions factors for Sand and Gravel Processing and/or Crushed Stone Processing were used to estimate the emissions from Unimin - Emmett. The corresponding reference for each emission factor is documented in the attached spreadsheet.

According to DEQ's January 12, 1996, letter, Unimin Corporation - Emmett must reevaluate the emissions from that facility when a finalized section of AP-42, "Industrial Sand Processing", is made available by EPA.

2. Modeling

No modeling for impact analysis for the various emissions from the facility's point sources was performed.

3. Area Classification

Unimin Corporation - Emmett, Gem County, Idaho, is located in AQCR 63. The area is classified as attainment or unclassifiable for all federal and state criteria air pollutants (i.e., PM, PM-10, CO, NO_x, VOCs, and SO_x).

4. Facility Classification

The facility is not a designated facility as defined in IDAPA 16.01.01.006.25. The facility is classified as an A2 source because the actual emissions of any criteria pollutant is less than 100 tons per year.

5. Regulatory Review

This OP is subject to the following permitting requirements:

- | | |
|------------------------------------|--|
| a. <u>IDAPA 16.01.01.401</u> | Tier II Operating Permit |
| b. <u>IDAPA 16.01.01.403</u> | Permit Requirements for Tier II Sources |
| c. <u>IDAPA 16.01.01.404.01(c)</u> | Opportunity for Public Comment |
| d. <u>IDAPA 16.01.01.404.04</u> | Authority to Revise or Renew Operating Permits |
| e. <u>IDAPA 16.01.01.406</u> | Obligation to Comply |
| f. <u>IDAPA 16.01.01.470</u> | Permit Application Fees for Tier II Permits |
| g. <u>IDAPA 16.01.01.625</u> | Visible Emission Limitation |
| h. <u>IDAPA 16.01.01.650</u> | General Rules for the Control of Fugitive Dust |
| i. <u>40 CFR 60 Subpart OOO</u> | Standards of Performance for Nonmetallic Mineral Processing Plants |

Unimin Corporation - Emmett processes feldspathic sand. Feldspathic sand consists of aluminum silicate with either sodium, potassium, calcium, or barium. A typical formula of feldspathic sand is NaAlSi₃O₈ (sodium feldspar). The silicon fraction in this compound is only 32% of the total molecular weight of 262. Since the operation at Unimin Corporation - Emmett is mainly material handling, the feldspar will remain in the form of silicates. IDAPA 16.01.01.585 (Rules) for the present the emissions levels for silicon, silicon carbide, silicon tetrahydride, and many silicas (amorphous and crystalline). There are no limits specified for silicates. Also sodium silicate is a very stable compound, melting point above 1000°C. The PM-10 emissions rates from the four stacks at Unimin Corporation - Emmett are 1.2, 1.0, 1.8, and 0.01 lb/hr. Assuming that thirty-two percent (32%) of the emissions are related to silicon, then the emission rates of silicon products are 0.4, 0.3, 0.6, and 0.003 lb/hr. These are all below the emission levels of silicon as presented in Section 585 of the Rules. However, the emissions of these sources would be mainly in the form of silicates. Therefore, Unimin Corporation - Emmett may not be subject to Section 585 of the Rules.

FEES

Fees apply to this facility in accordance with IDAPA 16.01.01.470. The facility is subject to permit application fees for Tier II permits of five hundred dollars (\$500.00). IDAPA 16.01.01.470 became effective on March 7, 1995.

RECOMMENDATIONS

Based on the review of the Tier II OP application and of applicable state and federal regulations concerning the permitting of air pollution sources, the Bureau staff recommends that Unimin Corporation - Emmett, Idaho, be issued a Tier II OP for the sources that are described in the facility's permit application. Staff also recommends that the facility be notified of the Tier II permit fee requirement in writing. This fee will be applicable upon issuance of the permit.

SRW\SJ\CDR:jrz...\permits\unimin\unimin1.TPM

Attachment

cc: J. Palmer, SWIRO
Source File
COF

ATTACHMENT A

Unimin Corporation
4601 Cascade Road
Emmett, ID 83617-9719

Contact Person: Steve Groening
Permit #: 045-00003

Plant Operating Hours 8760 hours/year

Emissions are Based on Maximum Rate, not Rated Capacity, of Process or Equipment.
The Rate of any Equipment is Limited to that of the Preceding or Following One.

Wet Plant

Source & Pollutant	E. Factor lb/ton	Reference 4th & 5th ed	Control Equipment	Cont. Eff. %	Hourly E. lb/hr	Annual E. ton/vr
HO-01,01A (PM)	0.24	T 8.19.1-1	wet	90	2.400	10.512
(PM ₁₀)	0.0024	T 8.19.1-1	wet	90	0.024	0.105
FE-01,01B (PM)	0.026	T 11.19.2-2	wet	90	0.260	1.139
(PM ₁₀)	0.0014	T 11.19.2-2	wet	90	0.014	0.061
BC-01,01D (PM)	0.026	T 11.19.2-2	wet	90	0.260	1.139
(PM ₁₀)	0.0014	T 11.19.2-2	wet	90	0.014	0.061
VS-12,00A (PM)	0.2	T 8.19.1-1	WET	100	0.000	0.000
(PM ₁₀)	0.12	T 8.19.1-1	WET	100	0.000	0.000
VS-13,00A (PM)	0.2	T 8.19.1-1	WET	100	0.000	0.000
(PM ₁₀)	0.12	T 8.19.1-1	WET	100	0.000	0.000
* RM-01,01C (PM)	0.0225	T 8.19.1-1	WET	100	0.000	0.000
(PM ₁₀)	0.0085714	T 8.19.1-1	WET	100	0.000	0.000
Total PM					2.920	12.790
Total PM-10					0.052	0.228

Dryer Operation

I. Emissions from Front-End Loading and Transfer Points

Source & Pollutant	E. Factor lb/ton	Reference 4th & 5th ed	Control Equipment	Cont. Eff. %	Hourly E. lb/hr	Annual E. ton/vr
HO-02,03A (PM)	0.24	T 8.19.1-1	wet	90	1.440	8.307
(PM ₁₀)	0.0024	T 8.19.1-1	wet	90	0.014	0.063
SC-01,03B (PM)	0.026	T 11.19.2-2	wet	90	0.156	0.683
(PM ₁₀)	0.0014	T 11.19.2-2	wet	90	0.008	0.037
BC-02,03C (PM)	0.026	T 11.19.2-2	wet	90	0.156	0.683
(PM ₁₀)	0.0014	T 11.19.2-2	wet	90	0.008	0.037
BE-01,03D (PM)	0.026	T 11.19.2-2	SC: DC-01	84.38	0.244	1.067
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-01	84.38	0.013	0.057
DR-01,03F (PM)	35	30502012	SC: DC-03	99.83	3.570	15.637
(PM ₁₀)	5	30502012	SC: DC-03	99.39	1.830	8.015
Total PM					5.568	24.378
Total PM-10					1.874	8.210
Total PM (Dryer Feeding, no dust collector)					1.752	7.674
Total PM-10 (Dryer Feeding, no dust collector)					0.031	0.137

II. Emissions from Fuel Burning Equipment (BU-01-03E)

Pollutant	E. Factor lb/1E+6 Btu	Reference AP-42, 5th	Control Equipment	Cont. Eff. %	Hourly E. lb/hr	Annual E. ton/vr
PM	13.7	T 1.4-1	SC: DC-03	99.39	0.002	0.007
PM-10	13.7	T 1.4-1	SC: DC-03	99.39	0.002	0.007
SO _x	0.61	T 1.4-2	SC: DC-03	0	0.012	0.052
NO _x	140	T 1.4-2	SC: DC-03	0	2.772	12.141
CO	35	T 1.4-2	SC: DC-03	0	0.693	3.035
VOC	2.784	T 1.4-3	SC: DC-03	0	0.055	0.241

Fine Screening Operation						
Source & Pollutant	E. Factor lb/ton	Reference 4th & 5th ed.	Control Equipment	Cont. Eff. %	Hourly E. lb/hr	Annual E. ton/yr
BE-02,03G (PM)	0.026	T 11.19.2-2	SC: DC-01	84.38	0.244	1.067
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-01	84.38	0.013	0.057
VS-10,04A (PM)	0.2	T 8.19.1-1	SC: DC-01	84.38	0.937	4.105
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-01	84.38	0.562	2.463
VS-11,04B (PM)	0.2	T 8.19.1-1	SC: DC-01	84.38	0.937	4.105
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-01	84.38	0.562	2.463
SC-02,000 (PM)	0.026	T 11.19.2-2	SC: DC-01	84.38	0.122	0.534
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-01	84.38	0.007	0.029
BE-04,05A (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
* VS-07,05B (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.282	1.235
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.169	0.741
* VS-08,05C (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.282	1.235
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.169	0.741
BN-04,06A-4 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-07,06A-7 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-10,08A-10 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-11,08A-11 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
Total PM					3.171	13.887
Total PM-10					1.502	6.581

Coarse Screening Operation

Source & Pollutant	E. Factor lb/ton	Reference 4th & 5th ed.	Control Equipment	Cont. Eff. %	Hourly E. lb/hr	Annual E. ton/yr
BE-03,04C (PM)	0.026	T 11.19.2-2	SC: DC-01	84.38	0.162	0.712
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-01	84.38	0.009	0.038
VS-01,04D (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.188	0.823
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.113	0.494
VS-02,04E (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.188	0.823
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.113	0.494
VS-03,04H (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.122	0.535
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.073	0.321
VS-04,04I (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.122	0.535
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.073	0.321
VS-05,04K (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.160	0.700
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.098	0.420
VS-06,04G (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.058	0.247
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.034	0.148
VS-09,04F (PM)	0.2	T 8.19.1-1	SC: DC-02	95.3	0.132	0.576
(PM ₁₀)	0.12	T 8.19.1-1	SC: DC-02	95.3	0.079	0.346
BE-05,04J (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.021	0.091
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.001	0.005
BN-01,06A-1 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-02,06A-2 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-03,06A-3 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-04,06A-4 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
BN-05,06A-5 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-06,06A-6 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-07,06A-7 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
BN-08,06A-8 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BN-09,06A-9 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
Total PM					1.665	7.291
Total PM-10					0.618	2.709

Loadout Operation

Source & Pollutant	E. Factor lb/ton	Reference 4th & 5th ed.	Control Equipment	Cont. Eff. %	Hourly E. lb/hr	Annual E. ton/yr
BN-10,08A-10 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
BN-11,08A-11 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
BC-05,06B (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BC-06,06C (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BC-10,08E (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.073	0.321
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.004	0.017
BC-07,07D (PM)	0.026	T 11.19.2-2	SC: DC-04	97.07	0.048	0.200
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-04	97.07	0.002	0.011
BC-08,000 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
BC-09,000 (PM)	0.026	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-02	95.3	0.000	0.000
BC-11,08B (PM)	0.026	T 11.19.2-2	None	0	1.560	6.833
(PM ₁₀)	0.0014	T 11.19.2-2	None	0	0.084	0.368
BC-12,08D (PM)	0.026	T 11.19.2-2	wet	90	0.260	1.139
(PM ₁₀)	0.0014	T 11.19.2-2	wet	90	0.014	0.061
HO-03,08C (PM)	0.24	T 8.19.1-1	wet	90	2.400	10.512
(PM ₁₀)	0.0024	T 8.19.1-1	wet	90	0.024	0.105
HO-04,11A (PM)	0.026	T 11.19.2-2	None	0	1.170	5.125
(PM ₁₀)	0.0014	T 11.19.2-2	None	0	0.063	0.276
HO-05,10A (PM)	0.026	T 11.19.2-2	SC: DC-04	97.07	0.034	0.150
(PM ₁₀)	0.0014	T 11.19.2-2	SC: DC-04	97.07	0.002	0.008
Bulk Ldg. 11C (PM)	0.026	T 11.19.2-2	None	0	1.560	6.833
(PM ₁₀)	0.0014	T 11.19.2-2	None	0	0.084	0.368
Total PM					7.250	31.755
Total PM-10					0.285	1.249
Total PM (Loadout Operation, no dust collector)					6.950	30.441
Total PM-10 (Loadout Operation, no dust collector)					0.269	1.178

Emissions from Baggers (BG-01 to 03)

Source & Pollutant	E. Factor lb/ton	Reference 4th ed.	Control Equipment	Cont. Eff. %	Hourly E. lb/hr	Annual E. ton/yr
BG-01,10B (PM)	0.24	T 8.19.1-1	SC: DC-04	97.07	0.316	1.386
(PM ₁₀)	0.0024	T 8.19.1-1	SC: DC-04	97.07	0.003	0.014
BG-02,10C (PM)	0.24	T 8.19.1-1	SC: DC-04	97.07	0.316	1.386
(PM ₁₀)	0.0024	T 8.19.1-1	SC: DC-04	97.07	0.003	0.014
* BG-03,11B (PM)	0.24	T 8.19.1-1	SC: DC-04	97.07	0.316	1.386
(PM ₁₀)	0.0024	T 8.19.1-1	SC: DC-04	97.07	0.003	0.014
Total PM					0.949	4.158
Total PM-10					0.009	0.042
TOTAL PM					21.522	94.265
TOTAL PM-10					4.344	19.025

Stack DC-01

Source	Hourly (lb/hr)		Annual (tons/year)	
	PM	PM-10	PM	PM-10
BE-01,03D (PM)	0.244	0.013	1.067	0.057
BE-02,03G (PM)	0.244	0.013	1.067	0.057
VS-10,04A (PM)	0.937	0.562	4.105	2.463
VS-11,04B (PM)	0.937	0.562	4.105	2.463
SC-02,000 (PM)	0.122	0.007	0.534	0.029
BE-03,04C (PM)	0.162	0.009	0.712	0.038
TOTAL	2.646	1.168	11.590	5.108

Stack DC-02

Source	Hourly (lb/hr)		Annual (tons/year)	
	PM	PM-10	PM	PM-10
BE-04,05A (PM)	0.073	0.004	0.321	0.017
* VS-07,05B (PM)	0.282	0.169	1.235	0.741
* VS-08,05C (PM)	0.282	0.169	1.235	0.741
BN-04,06A-4 (PM)	0.073	0.004	0.321	0.017
BN-07,06A-7 (PM)	0.073	0.004	0.321	0.017
BN-10,06A-10 (PM)	0.073	0.004	0.321	0.017
BN-11,06A-11 (PM)	0.073	0.004	0.321	0.017
VS-01,04D (PM)	0.188	0.113	0.823	0.494
VS-02,04E (PM)	0.188	0.113	0.823	0.494
VS-03,04H (PM)	0.122	0.073	0.535	0.321
VS-04,04I (PM)	0.122	0.073	0.535	0.321
VS-05,04K (PM)	0.160	0.096	0.700	0.420
VS-06,04G (PM)	0.056	0.034	0.247	0.148
VS-09,04F (PM)	0.132	0.079	0.576	0.346
BE-05,04J (PM)	0.021	0.001	0.091	0.005
BN-01,06A-1 (PM)	0.073	0.004	0.321	0.017
BN-02,06A-2 (PM)	0.073	0.004	0.321	0.017
BN-03,06A-3 (PM)	0.073	0.004	0.321	0.017
BN-04,06A-4 (PM)	0.000	0.000	0.000	0.000
BN-05,06A-5 (PM)	0.073	0.004	0.321	0.017
BN-06,06A-6 (PM)	0.073	0.004	0.321	0.017
BN-07,06A-7 (PM)	0.000	0.000	0.000	0.000
BN-08,06A-8 (PM)	0.073	0.004	0.321	0.017
BN-09,06A-9 (PM)	0.073	0.004	0.321	0.017
BN-10,06A-10 (PM)	0.000	0.000	0.000	0.000
BN-11,06A-11 (PM)	0.000	0.000	0.000	0.000
BC-05,06B (PM)	0.073	0.004	0.321	0.017
BC-06,06C (PM)	0.073	0.004	0.321	0.017
BC-10,06E (PM)	0.073	0.004	0.321	0.017
BC-08,000 (PM)	0.000	0.000	0.000	0.000
BC-09,000 (PM)	0.000	0.000	0.000	0.000
TOTAL	2.653	0.980	11.619	4.291

Stack DC-03

Source	Hourly (lb/hr)		Annual (tons/year)	
	PM	PM-10	PM	PM-10
DR-01,03F (PM)	3.570	1.830	15.637	8.015
BU-01,03E (PM)	0.002	0.002	0.007	0.007
TOTAL	3.572	1.832	15.644	8.023

Stack DC-04

Source	Hourly (lb/hr)		Annual (tons/year)	
	PM	PM-10	PM	PM-10
BC-07,07D (PM)	0.048	0.002	0.200	0.011
HO-05,10A (PM)	0.034	0.002	0.150	0.008
BG-01,10B (PM)	0.316	0.003	1.386	0.014
BG-02,10C (PM)	0.316	0.003	1.386	0.014
* BG-03,11B (PM)	0.316	0.003	1.386	0.014
TOTAL	1.029	0.014	4.508	0.060

* = NSPS Source